Citation:

Amador LF, Al Snih S, Markides KS, Goodwin JS. Weight change and mortality among older Mexican Americans. *Aging Clin Exp Res*. 2006 Jun;18(3):196-204.

PubMed ID: 16804365

Study Design:

Prospective Cohort Study

Class:

B - Click here for explanation of classification scheme.

Research Design and Implementation Rating:

POSITIVE: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

The purpose of this study was to examine the association between 2-year weight change and mortality in older Mexican Americans.

Inclusion Criteria:

Subjects were non-institutionalized Mexican American men and women aged 65 and older residing in five Southwestern states.

Exclusion Criteria:

Subjects lost to follow-up, who died, who provided incomplete information, or who refused re-interview, were excluded.

Description of Study Protocol:

Recruitment Data were used from the Hispanic Established Population for the Epidemiological Study of the Elderly (ESPESE).

Design Prospective longitudinal cohort study

Blinding used (if applicable) Not applicable

Intervention (if applicable) Not applicable

Statistical Analysis Chi-square, ANOVA, and *post hoc* Tukeys' test were used to examine the distribution of covariates for subjects by the 2-year weight change. Cox proportional hazard analysis was used to estimate the five-year mortality.

Data Collection Summary:

Timing of Measurements Baseline data were collected in 1993-94, 2-year follow-up in 1995-96, 5-year follow-up was done in 1998-99, and 7-year follow-up in 2000-01.

Dependent Variables

- Mortality (during 5-year follow-up period)

Independent Variables

- Weight (BMI) change in the two years from baseline.

Control Variables

- Age
- Gender
- Smoking status
- Self-reported medical conditions (diabetes, heart attack, stroke, hypertension, cancer or hip fracture)
- Depression
- Grip strength
- Functional ability
- Lower body function

Description of Actual Data Sample:

Initial N: 3050 subjects at baseline

Attrition (final N): 1749 subjects with complete data at the 2-year follow-up. Subjects were excluded for incomplete data, death, refusing re-interview, and loss to follow-up.

Age: ≥65 years

Ethnicity: Mexican American

Other relevant demographics:

Anthropometrics

Location: Texas, New Mexico, Colorado, Arizona, and California

Summary of Results:

Key Findings:

- Subjects were grouped by weight loss in two years from baseline: >5% (N=396), stable weight (N=984) and >5% weight gain (N=369.)
- The >5% weight loss group had an average 18 lb weight loss at 2-years. They were significantly more likely to have lower handgrip muscle strength, lower performance in lower body function, and significantly more likely to report ADL and IADL disability.
- In the five year follow-up period, among subjects who lost 10% of more, 29.7% died as compared to 20% and 17% of those whose weight remained stable or who gained 10% or

more, respectively.

- Two models assessed mortality. In Model 1, 2-year weight change was included along with age, gender, BMI and waist circumference. Model 2 included 2-year weight change with medical conditions, depression, hand drip strength, lower body function, smoking, and ADL disability.
- Model 1: The hazard ratio (HR) of death over the 5 year period was 1.35 (95% CI 1.06-1.70) for the group who lost 5% or more weight compared to the reference group (stable weight) and 0.78 (95% CI 0.58-1.05) for the group who gained 5% or more weight.
- Model 2: The HR of death over the 5 year period for the group who lost 5% or more weight was 1.32 (95% CI 1.04-1.67) and 0.77 (95% CI 0.57-1.04) for the group who gained 10% of more weight.
- Other factors such as older age, female gender, smoking, diabetes, hypertension, cancer, and IADL disability were associated with an increased risk of mortality.
- Kaplan-Meier survival curves showed that subjects who lost 5% or more of their weight had significantly lower (P=0.0001) survival curves than those subjects whose weight remained stable or who gained weight.

Author Conclusion:

The authors found an association between weight loss and mortality over a 5-year follow-up period in older Mexican Americans. The association was stronger for those who lost more than 10% of their initial weight.

This study found no significant association between weight gain and mortality and found that the association between weight loss and mortality is not mediated by medical conditions, change in muscle strength and lower function function or functional disability.

These findings suggest that weight loss is an important marker of risk for mortality in older Mexican Americans.

Reviewer Comments:

Study limitations include that medical history was self-reported and the severity of existing illness was not obtained; the cause of weight loss (intentional or unintentional) was not evaluated.

Research Design and Implementation Criteria Checklist: Primary Research

Relevance Questions		
1.	Would implementing the studied intervention or procedure (if found successful) result in improved outcomes for the patients/clients/population group? (Not Applicable for some epidemiological studies)	N/A
2.	Did the authors study an outcome (dependent variable) or topic that the patients/clients/population group would care about?	Yes

3.	Is the focus of the intervention or procedure (independent variable) or topic of study a common issue of concern to nutrition or dietetics practice?	Yes
4.	Is the intervention or procedure feasible? (NA for some epidemiological studies)	N/A

Validity Questions

1.	**Was the research question clearly stated?**	Yes
1.1.	Was (were) the specific intervention(s) or procedure(s) [independent variable(s)] identified?	Yes
1.2.	Was (were) the outcome(s) [dependent variable(s)] clearly indicated?	Yes
1.3.	Were the target population and setting specified?	Yes
2.	**Was the selection of study subjects/patients free from bias?**	Yes
2.1.	Were inclusion/exclusion criteria specified (e.g., risk, point in disease progression, diagnostic or prognosis criteria), and with sufficient detail and without omitting criteria critical to the study?	Yes
2.2.	Were criteria applied equally to all study groups?	Yes
2.3.	Were health, demographics, and other characteristics of subjects described?	Yes
2.4.	Were the subjects/patients a representative sample of the relevant population?	Yes
3.	**Were study groups comparable?**	Yes
3.1.	Was the method of assigning subjects/patients to groups described and unbiased? (Method of randomization identified if RCT)	N/A
3.2.	Were distribution of disease status, prognostic factors, and other factors (e.g., demographics) similar across study groups at baseline?	Yes
3.3.	Were concurrent controls used? (Concurrent preferred over historical controls.)	Yes
3.4.	If cohort study or cross-sectional study, were groups comparable on important confounding factors and/or were preexisting differences accounted for by using appropriate adjustments in statistical analysis?	Yes
3.5.	If case control or cross-sectional study, were potential confounding factors comparable for cases and controls? (If case series or trial with subjects serving as own control, this criterion is not applicable. Criterion may not be applicable in some cross-sectional studies.)	N/A

3.6.	If diagnostic test, was there an independent blind comparison with an appropriate reference standard (e.g., "gold standard")?	N/A
4.	**Was method of handling withdrawals described?**	Yes
4.1.	Were follow-up methods described and the same for all groups?	Yes
4.2.	Was the number, characteristics of withdrawals (i.e., dropouts, lost to follow up, attrition rate) and/or response rate (cross-sectional studies) described for each group? (Follow up goal for a strong study is 80%.)	Yes
4.3.	Were all enrolled subjects/patients (in the original sample) accounted for?	Yes
4.4.	Were reasons for withdrawals similar across groups?	Yes
4.5.	If diagnostic test, was decision to perform reference test not dependent on results of test under study?	N/A
5.	**Was blinding used to prevent introduction of bias?**	Yes
5.1.	In intervention study, were subjects, clinicians/practitioners, and investigators blinded to treatment group, as appropriate?	N/A
5.2.	Were data collectors blinded for outcomes assessment? (If outcome is measured using an objective test, such as a lab value, this criterion is assumed to be met.)	Yes
5.3.	In cohort study or cross-sectional study, were measurements of outcomes and risk factors blinded?	Yes
5.4.	In case control study, was case definition explicit and case ascertainment not influenced by exposure status?	N/A
5.5.	In diagnostic study, were test results blinded to patient history and other test results?	N/A
6.	**Were intervention/therapeutic regimens/exposure factor or procedure and any comparison(s) described in detail? Were interveningfactors described?**	Yes
6.1.	In RCT or other intervention trial, were protocols described for all regimens studied?	N/A
6.2.	In observational study, were interventions, study settings, and clinicians/provider described?	Yes
6.3.	Was the intensity and duration of the intervention or exposure factor sufficient to produce a meaningful effect?	Yes
6.4.	Was the amount of exposure and, if relevant, subject/patient compliance measured?	N/A
6.5.	Were co-interventions (e.g., ancillary treatments, other therapies) described?	N/A
6.6.	Were extra or unplanned treatments described?	N/A

6.7.	Was the information for 6.4, 6.5, and 6.6 assessed the same way for all groups?	N/A
6.8.	In diagnostic study, were details of test administration and replication sufficient?	N/A
7.	**Were outcomes clearly defined and the measurements valid and reliable?**	Yes
7.1.	Were primary and secondary endpoints described and relevant to the question?	Yes
7.2.	Were nutrition measures appropriate to question and outcomes of concern?	Yes
7.3.	Was the period of follow-up long enough for important outcome(s) to occur?	Yes
7.4.	Were the observations and measurements based on standard, valid, and reliable data collection instruments/tests/procedures?	Yes
7.5.	Was the measurement of effect at an appropriate level of precision?	Yes
7.6.	Were other factors accounted for (measured) that could affect outcomes?	Yes
7.7.	Were the measurements conducted consistently across groups?	Yes
8.	**Was the statistical analysis appropriate for the study design and type of outcome indicators?**	Yes
8.1.	Were statistical analyses adequately described and the results reported appropriately?	Yes
8.2.	Were correct statistical tests used and assumptions of test not violated?	Yes
8.3.	Were statistics reported with levels of significance and/or confidence intervals?	Yes
8.4.	Was "intent to treat" analysis of outcomes done (and as appropriate, was there an analysis of outcomes for those maximally exposed or a dose-response analysis)?	N/A
8.5.	Were adequate adjustments made for effects of confounding factors that might have affected the outcomes (e.g., multivariate analyses)?	Yes
8.6.	Was clinical significance as well as statistical significance reported?	Yes
8.7.	If negative findings, was a power calculation reported to address type 2 error?	N/A
9.	**Are conclusions supported by results with biases and limitations taken into consideration?**	Yes
9.1.	Is there a discussion of findings?	Yes
9.2.	Are biases and study limitations identified and discussed?	Yes
10.	**Is bias due to study's funding or sponsorship unlikely?**	Yes

10.1.	Were sources of funding and investigators' affiliations described?	Yes
10.2.	Was the study free from apparent conflict of interest?	Yes